NEiS

NECA/BICSI 607-2011

Standard for

Telecommunications Bonding and Grounding Planning and Installation Methods for Commercial Buildings

AN AMERICAN NATIONAL STANDARD

Published by
National Electrical Contractors Association

Jointly developed with
BICSI®

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(This foreword is not a part of the standard)

Foreword

Introduction

National Electrical Installation Standards™ (NEIS) are designed to improve communication among specifiers, purchasers, and suppliers of electrical construction services. They define a minimum baseline of quality and workmanship for installing electrical products and systems. NEIS are intended to be referenced in contract documents for electrical construction projects. The following language is recommended:

> Telecommunications bonding and grounding planning and installations shall be installed in accordance with NECA/BICSI 607-2011, *Standard for Bonding and Grounding Planning and Installation Methods for Commercial Buildings.*

The National Electrical Contractors Association (NECA) asked BICSI®, a Telecommunications Association, together undertook the task of developing this grounding and bonding standard for telecommunications systems and equipment.

NECA-BICSI standards are developed within the Technical Committees of BICSI and NECA. Members of the respective committees serve voluntarily and without compensation. The companies they represent are not necessarily members of BICSI or NECA. The standards developed by these committees represent a consensus of the broad expertise from within BICSI and NECA as well as from those outside that have an expressed interest. The viewpoint expressed at the time this standard was approved was from the contributors' experience and the state of the industry at that time. Users are encouraged to confirm that they have the latest edition of this standard. NECA-BICSI reviews its standards, at the minimum, every 5 years. At that time standards are reaffirmed, rescinded or revised accordingly. Any suggested revisions to be included in the next edition should be sent to NECA or BICSI.

This standard has been prepared by BICSI/NECA under the joint jurisdiction of BICSI and NECA and approved by consensus ballot in accordance with the requirements of the American National Standards Association (ANSI). Use of NEIS is voluntary, and neither NECA nor BICSI assume any obligation or liability to users of this publication. Existence of a standard shall not preclude any member or nonmember of either organization from specifying or using alternate construction methods permitted by applicable regulations. This publication is intended to comply with the edition of the *National Electrical Code*® (NEC®) in effect at the time of publication. Because they are quality standards, NEIS may exceed the minimum safety requirements of the NEC. It is the responsibility of users of this publication to comply with state and local regulations when installing electrical products and systems.

Suggestions for revisions and improvements to this standard should be addressed to:

> NECA Standards & Safety
> 3 Bethesda Metro Center, Suite 1100
> Bethesda, MD 20814
> (301) 657-3110 telephone
> (301) 215-4500 fax

Personnel safety and protection of susceptible electronic equipment from ground faults, lightning, ground potential rise, and electrical surges is of the utmost importance at telecommunications facilities.

Cloud to ground lightning discharges must find a path to ground; either discharging directly to the ground itself or to structures in contact with ground.

Electrical transients must return to their source, many times following similar ground paths. In either event, proper bonding reduces the harmful effects associated with these electrical events.

Metallic components for power distribution systems are bonded together to provide an effective ground-fault current path to allow proper operation of over-current devices. For telecommunications systems, metallic components are bonded to provide a low impedance path for electrical surges and transient voltages to return to their power source. The earth is also involved as a path for grounded (earthed) power systems and for lightning events. Lightning, fault currents, circuit switching (motors starting and stopping), and electrostatic discharge (ESD) are common causes of surges and transient voltages. An effective bonding and grounding system helps to minimize the damaging effects of electrical surges.

Proper bonding and grounding of electrical and information transport systems (ITS) infrastructure facilitates their intended operation. Improperly bonded and grounded electrical systems are a primary cause of power quality issues, which may affect information technology (IT) systems operation.

Other performance items related to bonding and grounding for telecommunications within a building involve power systems, surge protective devices, and electromagnetic compatibility (EMC). IEEE 1100-2005 contains recommended practices for these and related subjects.

Purpose

The purpose of this standard is to allow the designer and installer to enhance their knowledge of effective telecommunications bonding and grounding systems and to strive for installations in a neat and workmanlike manner. The principles and requirements of this standard are focused upon the North American region.

Specification of criteria

Two categories of criteria are specified; mandatory and advisory. The mandatory requirements are designated by the word "shall": advisory recommendations are designated by the words "should", "may", or "desirable", which are used interchangeably in this standard.

Mandatory criteria generally apply to protection, performance, administration, and compatibility; they specify the absolute minimum acceptable requirements. Advisory or desirable criteria are presented when their attainment would enhance the general performance of the cabling system in all its contemplated applications. A note in the text, table, or figure is used for emphasis or offering informative suggestions.

Metric equivalents of U.S. customary units

The majority of the metric dimensions in this standard are soft conversions of U.S. customary units (e.g., 100 millimeters [mm] is the soft conversion of 4 inches [in]). Wire diameters shown in brackets [ ] are approximate wire diameters (e.g., 6 AWG [(4.1 mm (0.16 in)]).

Life of the standard

This standard is a living document. The criteria contained in this standard are subject to revisions and updating as warranted by advances in building construction techniques and telecommunications technology.

Annexes

Annex A is informative and not considered a requirement of this standard.

Photos and art provided by BICSI.

1. Scope

This American National Standard specifies aspects of planning and installation of telecommunications bonding and grounding systems within a commercial building *(see figure 1)*. This standard is intended to enhance the planning, specification and layout of an effective telecommunications bonding and grounding system. Additionally, this standard specifies installation requirements for components of the telecommunications bonding and grounding system.

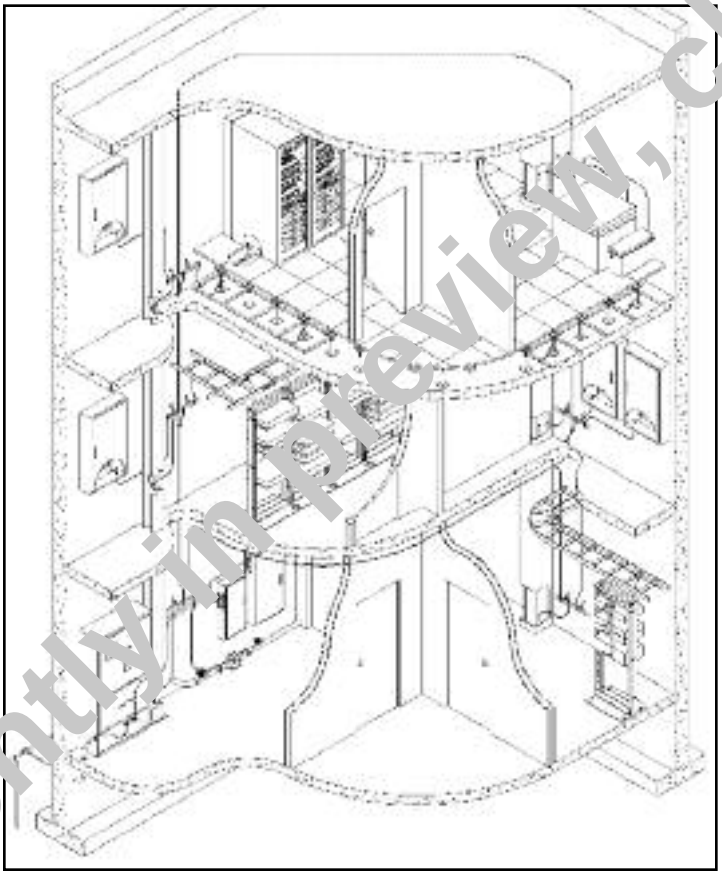

Figure 1. Example illustration of a telecommunications bonding and grounding system

2. Normative References

The following standards and related applicable addenda contain provisions that, through reference in this text, constitute provisions of this standard:

- IEEE C2-2007, N*ational Electrical Safety Code®*
- ANSI/J-STD-607-A-2002, *Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications*
- NFPA 70™–2011, *National Electrical Code*
- NFPA 70E®–2004, *Standard for Electrical Safety in the Workplace*

At the time of publication, the editions listed above were current. As standards are subject to revision, users of this standard are encouraged to review and apply the latest published edition.